

Appl. No. : 09/771,043
Filed : January 26, 2001

REMARKS

Claims 1-3 have been cancelled. Claims 4-9 have been amended. Claims 4-12 are now pending in this application. Support for the amendments is found in the existing claims and the specification as discussed below. Accordingly, the amendments do not constitute the addition of new matter. Applicant respectfully requests the entry of the amendments and reconsideration of the application in view of the amendments and the following remarks.

The specific changes to the specification and the amended claims are shown on a separate set of pages attached hereto and entitled VERSION WITH MARKINGS TO SHOW CHANGES MADE, which follows the signature page of this Amendment. On this set of pages, insertions are underlined and deletions are struck through.

Rejection under 35 U.S.C. § 112, second paragraph

Claims 1-12 are rejected because the use of the passive voice and lack of clarity of the preamble render the claims indefinite.

In response, claims 1-3 have been cancelled and claims 4-9 have been amended to more clearly set forth the claimed invention. Support for the amendments is found in original claims 1-3 and in the present specification at page 10, lines 10-18, for example.

In view of Applicants' amendments, reconsideration and withdrawal of this ground of rejection is respectfully requested.

Rejection under 35 U.S.C. § 102(e)

Claims 1-12 are rejected under 35 U.S.C. § 102(e) as anticipated by Rovera et al. (U.S. Patent No. 6,221,635). In order to have anticipation, all of the claim elements must be found within the cited document. It is respectfully submitted that all of the elements of the claims as amended are not found in Rovera et al.

The claims as amended specify that the substrate is a plastic selected from the group consisting of polyethylene, polystyrene, polycarbonate, polypropylene, phenol resin, epoxy resin, polycarbodiimide resin, polyvinyl chloride, polyvinylidene fluoride, polyethylene fluoride, polyimide, and acrylate resin.

Rovera et al. teach generally that "the invention encompasses use of various solid supports such as, for example, nitrocellulose, and all those supports that are known to be able not only to bind the primers irreversibly but also to be able to bind the template DNA reversibly" (col. 11, lines 31-34). However, Rovera et al. only specifically disclose nylon membrane and

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nitrocellulose. That is, the only plastic substrate material disclosed by Rovera et al. is nylon membrane. Rovera et al. do not disclose a plastic selected from the group consisting of polyethylene, polystyrene, polycarbonate, polypropylene, phenol resin, epoxy resin, polycarbodiimide resin, polyvinyl chloride, polyvinylidene fluoride, polyethylene fluoride, polyimide, and acrylate resin. Consequently, Rovera et al. do not teach all of the elements of the invention as presently claimed.

Furthermore, the presently claimed invention is not obvious in view of Rovera et al. One of ordinary skill in the art would not be motivated to make a substrate using a plastic selected from the group consisting of polyethylene, polystyrene, polycarbonate, polypropylene, phenol resin, epoxy resin, polycarbodiimide resin, polyvinyl chloride, polyvinylidene fluoride, polyethylene fluoride, polyimide, and acrylate resin in view of Rovera et al because Rovera et al teach that nylon membrane is used "because UV crosslinking is known to activate thymine bases in DNA which then covalently couple to primary amines present in the nylon" (col. 29, lines 1-3). Rovera et al. are silent with regards to a plastic lacking a primary amine such as the plastics of Applicants' claimed invention.

The specified plastics for the substrate used in the presently claimed invention are plastics which have no primary amine. The present inventors have found that firm immobilization of a nucleic acid on a plastic having no primary amine can be made by irradiation with an electromagnetic wave. Based upon the Rovera et al. disclosure, one of ordinary skill in the art would not have expected immobilization of a nucleic acid in the absence of a primary amine on the substrate. In conclusion, it is respectfully submitted that the present claims are neither anticipated nor rendered obvious by Rovera et al.

In view of Applicant's amendments and arguments, it is respectfully requested that the Examiner reconsider and withdraw this ground of rejection.

CONCLUSION

In view of Applicants' amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

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Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Claims 4-9 have been amended as shown:

4. (Amended) A nucleic acid-immobilized substrate comprising a substrate ~~for immobilizing a nucleic acid and the~~ a nucleic acid as defined in claim 1 immobilized on the substrate, wherein the substrate is a plastic selected from the group consisting of polyethylene, polystyrene, polycarbonate, polypropylene, phenol resin, epoxy resin, polycarbodiimide resin, polyvinyl chloride, polyvinylidene fluoride, polyethylene fluoride, polyimide, and acrylate resin, and the nucleic acid has a polymer comprising a compound having an unsaturated bond, said polymer being bonded to the 3' end or 5' end or both ends of the nucleic acid.

5. (Amended) A nucleic acid-immobilized substrate ~~comprising a substrate for immobilizing a nucleic acid and the~~ nucleic acid as defined in claim 2 immobilized on the substrate according to claim 4, wherein an average degree of polymerization of the polymer is not less than 3 and not more than 100.

6. (Amended) A nucleic acid-immobilized substrate ~~comprising a substrate for immobilizing a nucleic acid and the~~ nucleic acid as defined in claim 3 immobilized on the substrate according to claim 5, wherein a monomer which constitutes the polymer is a nucleotide.

7. (Amended) A method for producing a nucleic acid-immobilized substrate, comprising bringing a substrate ~~for immobilizing a nucleic acid into contact with the~~ a nucleic acid as defined in claim 1, and irradiating a contact portion with an electromagnetic wave, wherein the substrate is a plastic selected from the group consisting of polyethylene, polystyrene, polycarbonate, polypropylene, phenol resin, epoxy resin, polycarbodiimide resin, polyvinyl chloride, polyvinylidene fluoride, polyethylene fluoride, polyimide, and acrylate resin, and the nucleic acid has a polymer comprising a compound having an unsaturated bond, said polymer being bonded to the 3' end or 5' end or both ends of the nucleic acid.

8. (Amended) A method ~~for producing a nucleic acid immobilized substrate, comprising bringing a substrate for immobilizing a nucleic acid into contact with the~~ nucleic acid as defined in claim 2, and irradiating a contact portion with an electromagnetic wave according to claim 7, wherein an average degree of polymerization of the polymer is not less than 3 and not more than 100.

9. (Amended) A method ~~for producing a nucleic acid immobilized substrate, comprising bringing a substrate for immobilizing a nucleic acid into contact with the~~ nucleic acid as defined in claim 3, and irradiating a contact portion with an electromagnetic wave according to claim 5, wherein a monomer which constitutes the polymer is a nucleotide.